

## ABSTRACT

A dry process for the cleaning of precision surfaces such as of semiconductor wafers, by using process materials such as carbon dioxide and useful additives such as cosolvents and surfactants, where the process materials are applied exclusively in gaseous and supercritical states. Soak and agitation steps are applied to the wafer, including a rapid decompression of the process chamber after a soak period at higher supercritical pressure, to mechanically weaken break up the polymers and other materials sought to be removed, combined with a supercritical fluid flush to carry away the loose debris.